

WHAT IS CLAIMED IS:

1. A suturing device, comprising:
 - a sheath having a proximal end and a distal end, said distal end configured to enter soft tissue when moved in a first direction;
 - 5 a sheath handle at said proximal end of said sheath;
 - a suture slidably disposed within said sheath and having a proximal end and a distal end;
 - 10 a suture handle at said proximal end of said suture, said suture handle configured to move said suture within said sheath when moved relative to said sheath handle; and
 - 15 a suture hook at said distal end of said suture, said suture hook within said sheath when said suture handle is located a first distance from said sheath handle, said suture hook expelled from said sheath when said suture handle is positioned to a second distance from said sheath handle, said suture hook deploying upon said expelling to resist movement of said suture in a second direction substantially opposite said first direction.
2. The suturing device as described in Claim 1, wherein said suture hook is a J-hook suture hook.
3. The suturing device as described in Claim 1, wherein said suture hook is a T-bar suture hook.
4. The suturing device as described in Claim 1, wherein said suture hook is integrally formed with said suture distal end.
5. The suturing device as described in Claim 1, wherein said suture hook is selectively attachable to said suture distal end.
- 25 6. The suturing device as described in Claim 1, wherein said suture is a wire suture.
7. The suturing device as described in Claim 1, wherein said suture is a braided suture.
8. The suturing device as described in Claim 1, wherein said suture is a monofilament suture.
- 30 9. The suturing device as described in Claim 1, further comprising:

a suture applicator having first and second applicator members, said suture applicator configured to move said suture handle relative to said suture sheath handle when said first and second applicator members are moved relative to each other.

5 10. The suturing device as described in Claim 9, wherein said suture applicator is operable with one hand.

11. The suturing device as described in Claim 9, wherein said suture applicator facilitates said expelling of said suture hook and said first and second directions are substantially perpendicular to a surgical field.

10 12. The suturing device as described in Claim 9, further comprising:
a flange on a distal end of said suture applicator to regulate a penetration of said sheath within said soft tissue.

15 13. The suturing device as described in Claim 9, further comprising:
a lock substantially preventing movement of the suture sheath handle relative to the suture handle.

20 14. A suture clip applicator, comprising:
a shaft with a handle;
a triggering member; and
a clip wedge that moves relative to said shaft and dislodges from a suture clip upon an activation of said triggering member.

25 15. A suture clip applicator, comprising:
a shaft having a clip retention member;
a lever movably coupled to said shaft; and
a clip wedge linked to said lever so that said clip wedge moves relative to said clip retention member when said lever is moved.

30 16. The suture clip applicator described in Claim 15, further comprising:
a suture clip having two wings and a wedge bore, said wings biased toward each other, said suture clip configured to receive said clip wedge in said wedge bore to separate said wings by a distance greater than a suture diameter, said clip retention member configured to hold said suture clip substantially stationary while said clip wedge moves, said holding of said

suture clip causing said clip wedge to be withdrawn from said wedge bore whereupon said wings move toward each other.

17. The suture clip applicator as described in Claim 16, wherein said suture clip applicator positions said suture clip to a position along a suture wherein, 5 prior to said withdrawing of said clip wedge, said suture is between said wings and said suture clip is proximate a soft tissue undergoing suturing, and wherein said shaft is substantially perpendicular to a surgical site during said positioning and during said withdrawing of said clip wedge.

18. The suture clip applicator as described in Claim 17, wherein said suture clip applicator is adapted so that one hand can perform both said positioning and said withdrawing. 10

19. The suture clip applicator as described in Claim 18, wherein said suture clip is configured so that said wings grip a suture between them with a first force sufficient to maintain said grip in the presence of a second force applied to said suture clip in a direction along said suture, said second force substantially the same as 15 that required to hold two to tissues together in a successful surgical suturing procedure.

20. A suture clip applicator, comprising:
an applicator frame having an applicator shaft;
an applicator handle connected to said applicator shaft near a handle 20 end of the applicator shaft;
a shoulder connected to said applicator shaft near a clip end of the applicator shaft;
a lever movably coupled to said applicator frame;
a retractor coupled to said lever, said retractor configured to move 25 from an apply position into a retract position in a path substantially along said applicator shaft when said lever is moved relative to said applicator handle;
a clip wedge connected to a clip end of said retractor; and
a suture clip having opposing wings biased to exert a force toward 30 each other, said clip wedge fitted into a wedge bore of said suture clip when said retractor is in said apply position, said fitting of said clip wedge creating

a distance between said wings that is greater than the diameter of a suture, said shoulder preventing said suture clip from travelling with said clip wedge in said path when said lever is moved relative to said applicator handle, said movement of said lever thus removing said clip wedge from said wedge bore and causing said wings of said suture clip to spring together.

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21. A method for suturing, said method comprising the steps of:

(1) advancing a suture assembly into a surgical field in an operating direction substantially perpendicular to said surgical field until a distal end of a suture sheath of said suture assembly penetrates tissues to be sutured together;

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(2) moving a suture within said suture sheath such that a suture hook on a distal end of said suture emerges from the distal end of said suture sheath and deploys to resist withdrawal of said suture from said penetrated tissues; and

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(3) removing said suture assembly from said surgical field in a direction substantially opposite said operating direction while said suture hook remains deployed with said suture attached thereto.

22. The method for suturing described in Claim 21, further comprising the steps of:

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(4) advancing a suture clip applicator into said surgical field in said operating direction;

(5) positioning a suture clip carried by said suture clip applicator about said suture at a position along said suture appropriate to create a pressure upon said tissues at least sufficient to surgically join said tissues;

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(6) releasing said suture clip such that it grips said suture to maintain said pressure; and

(7) withdrawing said suture clip applicator from said surgical field in a direction substantially opposite said operating direction.

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23. The method for suturing described in Claim 22, wherein multiple stitches of a surgical suturing procedure are placed in tissues by repeating steps (1) through (7).

24. The method for suturing described in Claim 22, said method comprising the further steps of:

5 placing a clip wedge between two wings of said suture clip prior to said positioning of said suture clip; and

removing said clip wedge during said releasing of said suture clip.

25. The method for suturing described in Claim 21, wherein said advancing of said suture assembly and said moving of said suture within said suture sheath are both performed by operating a suture applicator with a single hand, said suture applicator carrying said suture assembly.

10 26. A method for suture clipping, said method comprising the steps of:

advancing a suture clip applicator into a surgical field in an operating direction substantially perpendicular to said surgical field;

15 positioning a suture clip carried by said suture clip applicator about said suture at a position along said suture appropriate to create a pressure at least sufficient to surgically join said tissues; and

releasing said suture clip such that it grips said suture to maintain said pressure.

27. The method for suture clipping described in Claim 26, the method comprising the further steps of:

20 placing a clip wedge between two wings of said suture clip prior to said positioning of said suture clip; and

removing said clip wedge during said releasing of said suture clip.

28. The method for suture clipping described in Claim 27, wherein said advancing, said positioning, said removing and said releasing are all performed by 25 operating said suture clip applicator with one hand.

29. An arteriotomy tool comprising:

30 a tubular body, said distal end of said tubular body having a sharpened edge to cut through and sever tissue upon rotation of said tubular body, and

a hook provided at said distal end of said tubular body to hold said severed tissue.

30. The arteriotomy tool as described in Claim 29 wherein said hook is provided through a guide channel within said tubular body.